AMENDMENTS

AMENDMENTS TO THE CLAIMS:

These claims replace all prior versions and listings of claims in the above-referenced application.

1. (Currently Amended) A data communication system, comprising:

a number of nodes interconnected in a network, the nodes including a source node, a destination node, and at least one intermediate node, wherein each of the nodes include an ingress port and an egress port;

source logic in the source node to identify a data route from the source node to the destination node through the at least one intermediate node, the data route being communicated to each subsequent node in the data route via a data packet header comprising an egress port of a next subsequent node, ~~specified by a sequence of at least one destination port value and~~ a current hop count, and a total number of hops in the data route, wherein each subsequent intermediate node includes routing logic configured to route a data packet associated with the data packet header in response to the egress port independent of the state of a routing table associated with the node ~~that are attached to a data packet to be transmitted from the source node to the destination node;~~

~~routing logic in the at least one intermediate node to route the data packet along the data route; and~~

~~destination logic in the destination node to detect a final destination of the data packet~~.

2. (Currently Amended) The system of claim 1, further comprising:

return routing logic in ~~the at least one~~ each subsequent intermediate node configured to insert ~~record at least one source~~ an ingress port ~~value~~ indicator into the data packet header, the indicator responsive to the port where the data packet was received ~~of the at least one intermediate node in the data packet; and~~

~~wherein a total hops value is attached to the data packet~~.

3. (Previously Presented) The system of claim 1, further comprising a routing table located in the source node, the routing table containing at least one data route from the source node to the destination node.

4. (Previously Presented) The system of claim 1, wherein the routing logic further comprises logic to decrement the current hop count.

5. (Currently Amended) The system of claim 1, further comprising destination logic in the destination node configured to swap the ingress port indicator with the egress port in the data packet header of the data packet in response to the condition when the current hop count exceeds a threshold value ~~wherein the return routing logic further comprises logic to replace the at least one destination port value in the data packet with the source port value of the at least one intermediate node~~.

6. (Currently Amended) A data communication system, comprising:

a number of nodes interconnected in a network, the nodes including a source node, a destination node, and at least one intermediate node, wherein each of the nodes include an ingress port and an egress port;

path identification means in the source node for identifying a data route from the source node to the destination node through the at least one intermediate node, the data route being communicated to each subsequent node in the data route via a data packet header comprising an egress port of a next subsequent node, ~~specified by a sequence of at least one destination port value and~~ a current hop count, and a total number of hops in the data route, wherein each subsequent intermediate node includes routing means configured to route a data packet associated with the data packet header in response to the next subsequent node's egress port independent of the state of a routing table associated with the node ~~that are attached to a data packet to be transmitted from the source node to the destination node~~;

~~routing means in the at least one intermediate node for routing the data packet along the data route;~~ and

destination means in the destination node for detecting ~~an~~ the arrival of a ~~the~~ data packet designated for ~~at~~ the destination node.

7. (Currently Amended) The system of claim 6, further comprising:

return routing means in ~~the at least one~~ each subsequent intermediate node for recording ~~at least one source~~ an ingress port ~~value~~ indicator responsive to the port where the data packet was received ~~of the at least one intermediate node in the data packet; and wherein a total hops value is attached to the data packet~~.

8. (Previously Presented) The system of claim 6, further comprising a routing table located in the source node, the routing table containing at least one data route from the source node to the destination node.

9. (Previously Presented) The system of claim 6, wherein the routing means further comprises means for decrementing the current hop count.

10. (Currently Amended) The system of claim 7, wherein the return routing means further comprises means for swapping the ingress port indicator with the egress port and replacing the current hop count with the total number of hops ~~at least one destination port value in the data packet with the source port value of the at least one intermediate node~~ responsive to said destination means.

11. (Currently Amended) A method for data communications, comprising the steps of:

generating a data packet to transmit from a source node to a destination node through at least one intermediate node in a network;

identifying a data route from the source node to the destination node through the at least one intermediate node, the data route being communicated to each subsequent node in the data route via a header associated with the data packet, the header comprising an egress port of a next subsequent node, ~~specified by a sequence of at least one destination port value and~~ a current hop count, and a total number of hops in the data route ~~that are attached to the data packet to be transmitted from the source node to the destination node~~;

routing the data packet along the data route in response to the egress port independent of the state of a routing table associated with the node ~~the at least one intermediate node~~; and

detecting ~~an~~ the arrival of the data packet ~~in~~ at the destination node.

12. (Currently Amended) The method of claim 11, further comprising the ~~steps~~ step of:

~~attaching a total hops value to the data packet; and~~

recording ~~at least one source~~ an ingress port ~~value~~ indicator responsive to the port of the respective subsequent node where the data packet was received along the data route ~~of the at least one intermediate node in the data packet in the at least one intermediate node~~.

13. (Previously Presented) The method of claim 11, wherein the step of identifying a data route from the source node to the destination node through the at least one intermediate node further comprises the step of examining a routing table located in the source node, the routing table containing at least one data route from the source node to the destination node.

14. (Currently Amended) The method of claim 11, wherein the step of routing the data packet along the data route ~~in the at least one intermediate node~~ further comprises the step of decrementing the current hop count.

15. (Currently Amended) The method of claim 12, ~~wherein the step of recording at least one source port value of the at least one intermediate node in the data packet in the at least one intermediate node~~ further ~~comprises~~ comprising the step of replacing the ingress port indicator with the egress port in the data packet header of the data packet in response to the condition when the current hop count falls below a threshold value ~~at least one destination port value in the data packet with the at least one source port value of the at least one intermediate node~~.

16. (Currently Amended) A method for data communications, comprising:

providing a network having a plurality of nodes, the plurality of nodes comprising at least a source node and a destination node;

using a source node to identify a preferred data route for transferring data from the source node to the destination node;

generating a data packet having a header comprising an egress port indicator, ~~at least one destination port value and~~ a current hop count, and a total hop count, the data packet responsive to the preferred data route; ~~and~~

routing the data packet along the preferred data route in accordance with the ~~at least one destination port value~~ egress port indicator added to the header by the previous node along the data route and the current hop count, wherein routing is accomplished independent of the state of a routing table in a node along the data route ~~comprises modifying the data packet by~~; and

decrementing the current hop count ~~and replacing the at least one destination port value at each subsequent node~~.

17. (Previously Presented) The method of claim 16, further comprising:

using the current hop count to detect when the data packet has arrived at the destination node.

18. (Canceled) The method of claim 16, wherein routing is accomplished without performing a table lookup at intermediate nodes.

19. (Currently Amended) The method of claim 16, further comprising:

inserting ~~at least one source~~ an ingress port ~~value~~ indicator ~~and further modifying~~ in the data packet header.

20. (Currently Amended) The method of claim 19, further comprising:

acknowledging receipt of the data packet at the destination node by resetting the current hop count to the total hop count and swapping the ~~at least one destination and source port values~~ ingress port indicator with the egress port indicator.

21. (Previously Presented) The method of claim 20, wherein acknowledging receipt is accomplished independent of the state of a routing table in the destination node.

22. (Previously Presented) The method of claim 21, wherein acknowledging receipt further comprises routing the data packet back to the source node.

23. (Canceled) The method of claim 21, wherein routing comprises forwarding the data packet by:

identifying the destination port value in the data packet;

decrementing the current hop count;

transmitting the data packet via a port in response to the destination port value; and

repeating the identifying, decrementing, and transmitting processes when the current hop exceeds a threshold value.

24. (Previously Presented) The method of claim 20, wherein acknowledging receipt further comprises checking for a timeout.

25. (Currently Amended) The method of claim 24, further comprising:

using the source node to identify a next best data route for transferring data from the source node to the destination node in response to the timeout; and

generating ~~the~~ a replacement data packet having an egress port indicator ~~at least one destination port value and~~ a current hop count, and a total hop count, the data packet responsive to the next best data route.